1125-42-503 **Demetrio Labate*** (dlabate@math.uh.edu), University of Houston, Department of Mathematics, 651 Philip Guthrie Hoffman Hall, Houston, TX 77204-3008, and **Kanghui Guo** (kanghuiguo@missouristate.edu), Missouri State University, Department of Mathematics, Springfield, MO 65804. *Detection of singularities by discrete multiscale representations.*

One of the most remarkable properties of the continuous curvelet and shearlet transforms is their sensitivity to the directional regularity of functions and distributions. As a consequence of this property, these transforms can be used to characterize the geometry of edge singularities of functions and distributions by their asymptotic decay at fine scales. This ability is a major extension of the capability of the conventional continuous wavelet transform which can only describe pointwise regularity properties. However, while in the case of wavelets it is relatively easy to relate the asymptotic properties of the continuous transform to properties of discrete wavelet coefficients, this problem is surprisingly challenging in the case of discrete curvelets and shearlets. In this talk, we present novel non-asymptotic estimates showing that discrete shearlet and curvelet coefficients can detect, in a precise sense, the location and orientation of curvilinear edges. We show the connection and implications of this result to sparse approximation properties and other applications. (Received September 04, 2016)